

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method of diffusing sound in a space  $[(100)]$  in order to transmit in this space information in the form of acoustic waves representative of a signal  $X(t)$ , by means of at least one acoustic enclosure  $[(2)]$  having at least one input  $[(25)]$  controlling a number  $n$  of loudspeakers  $[(22,24)]$ ,  $n$  being a natural integer greater than or equal to 1, this method comprising at least one step of sound diffusion during which an electrical signal  $P(t)=W(t)\otimes X(t)$  is applied to the input of the acoustic enclosure  $[(2)]$  where:

- $\otimes$  is the mathematical convolution product operator and
- $W(t)$  represents a filter template previously determined and memorised,

the said method comprising a training step during which the filter template is determined as follows:

$W(t)=S(-t)\otimes I(t)$ , where

- $S(-t)$  is the temporal return of the impulse response  $S(t)$  between the enclosure and a target zone  $[(101)]$  of the space  $[(100)]$  where sound is diffused,  $t$  representing the time,

- and  $I(t)$  is the temporal response of the product  $e^{-2i\pi ft_0} \cdot S_c(f)$ , where  $f$  represents the frequency,  $t_0$  is a time shift coefficient and  $S_c(f)=1/(S_1(f))^\alpha$ ,  $\alpha$  being a non zero positive number and  $S_1(f)$  being a real function obtained by clipping the module  $|S(f)|$  of the response in frequency  $S(f)$  of the impulse response  $S(t)$ .

2. (original) A method according to claim 1, wherein during the training step the function  $Sc(f)$  is determined as follows:

. for  $Sf_{moy} \cdot R2 < |S(f)| < Sf_{moy} \cdot R1$ ,  $Sc(f) = 1/|S(f)|^\alpha$ ,  $R1$  and  $R2$  being two positive numbers,  $R1$  being greater than  $R2$  and  $Sf_{moy}$  being the mean value of  $|S(f)|$ ,

. for  $|S(f)| \leq Sf_{moy} \cdot R2$ ,  $Sc(f) = 1/(Sf_{moy} \cdot R2)^\alpha$ ,

. for  $|S(f)| \geq Sf_{moy} \cdot R1$ ,  $Sc(f) = 1/(Sf_{moy} \cdot R1)^\alpha$ .

3. (currently amended) A method according to ~~any one of the preceding claims~~ claim 2, wherein the coefficients  $R1$  and  $R2$  are chosen so as to obtain an amplitude excursion chosen from among an excursion of around 12 dB, an excursion of around 24 dB, an excursion of around 36 dB and an excursion of around 48 dB.

4. (currently amended) A method according to ~~any one of the preceding claims~~ claim 3, in which the quantity  $Sf_{moy}$  is calculated for a band of frequencies  $fb$  representing only a portion of the audible frequencies.

5. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein the coefficient of the temporal shift  $t0$  is comprised between 0 and  $Tmax$ ,  $Tmax$  being the recording duration of the response  $S(t)$ .

6. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein  $I(t)$  is obtained using the real part of the inverse Fourier transform of the product  $e^{-2i\pi ft0} \cdot Sc(f)$ .

7. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein

the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples, and  $S(f)$  is calculated from  $S(t)$ , using a technique of fast Fourier transform of  $S(t)$ .

8. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples and  $I(t)$  is calculated from the product  $e^{-2i\pi f t_0} . Sc(f)$  using a fast inverse Fourier transform technique.

9. (currently amended) A method according to ~~any one of the preceding claims~~ claim 1, wherein  $\alpha$  equals 1.

10. (new) A method according to claim 2, wherein the coefficient of the temporal shift  $t_0$  is comprised between 0 and  $T_{max}$ ,  $T_{max}$  being the recording duration of the response  $S(t)$  .

11. (new) A method according to claim 2, wherein  $I(t)$  is obtained using the real part of the inverse Fourier transform of the product  $e^{-2i\pi f t_0} . Sc(f)$  .

12. (new) A method according to claim 2, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples, and  $S(f)$  is calculated from  $S(t)$ , using a technique of fast Fourier transform of  $S(t)$ .

13. (new) A method according to claim 2, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples and  $I(t)$  is calculated from the product  $e^{-2i\pi f t_0} . Sc(f)$  using a fast inverse Fourier transform technique.

14. (new) A method according to claim 3, wherein the coefficient of the temporal shift  $t_0$  is comprised between 0 and  $T_{\max}$ ,  $T_{\max}$  being the recording duration of the response  $S(t)$ .

15. (new) A method according to claim 3, wherein  $I(t)$  is obtained using the real part of the inverse Fourier transform of the product  $e^{-2i\pi ft_0} \cdot Sc(f)$ .

16. (new) A method according to claim 3, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples, and  $S(f)$  is calculated from  $S(t)$ , using a technique of fast Fourier transform of  $S(t)$ .

17. (new) A method according to claim 3, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples and  $I(t)$  is calculated from the product  $e^{-2i\pi ft_0} \cdot Sc(f)$  using a fast inverse Fourier transform technique.

18. (new) A method according to claim 4, wherein  $I(t)$  is obtained using the real part of the inverse Fourier transform of the product  $e^{-2i\pi ft_0} \cdot Sc(f)$ .

19. (new) A method according to claim 4, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples, and  $S(f)$  is calculated from  $S(t)$ , using a technique of fast Fourier transform of  $S(t)$ .

20. (new) A method according to claim 4, wherein the impulse response  $S(t)$  is memorised on a number  $2^k$  of samples and  $I(t)$  is calculated from the product  $e^{-2i\pi ft_0} \cdot Sc(f)$  using a fast inverse Fourier transform technique.